

SEQUENCE LISTING

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<110> GUERIN-MARCHAND, CLAUDINE
      DRUILHE, PIERRE
<120> PEPTIDE SEQUENCES SPECIFIC FOR THE HEPATIC STAGES OF
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<130> 010830-118
<140> 09/900,963
<141> 2001-07-10
<150> 08/098,327
<151> 1993-11-24
<150> PCT/FR92/00104
<151> 1992-02-05
<150> FR 91 01286
<151> 1991-02-05
<160> 47
<170> PatentIn Ver. 3.3
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Gln
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Leu

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Leu Gln Xaa Gln Gln Xaa Asp Leu Glu Gln Xaa Arg Xaa Ala Lys Glu
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Glu
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Glu Lys Leu Gln Xaa Gln Gln Xaa Asp Leu Glu Gln Xaa Arg Xaa Ala
                  5
                                      10
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Lys Glu Lys Leu Gln Xaa Gln Gln Xaa Asp Leu Glu Gln Xaa Arg Xaa
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Ala Lys Glu Lys Leu Gln Xaa Gln Gln Xaa Asp Leu Glu Gln Xaa Arg
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                  5
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Xaa Ala Lys Glu Lys Leu Gln Xaa Gln Gln Xaa Asp Leu Glu Gln Xaa
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Arg Xaa Ala Lys Glu Lys Leu Gln Xaa Gln Gln Xaa Asp Leu Glu Gln
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Xaa
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                                      10
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Leu Glu Gln Xaa Arg Xaa Ala Lys Glu Lys Leu Gln Xaa Gln Gln Xaa
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Asp

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Asp Leu Glu Gln Xaa Arg Xaa Ala Lys Glu Lys Leu Gln Xaa Gln Gln
                                      10
Xaa
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<213> Plasmodium falciparum
<400> 19
Arg Lys Ala Asp Thr Lys Lys Asn Leu Glu Arg Lys Lys Glu His Gly
Asp Ile Leu Ala Glu Asp Leu Tyr Gly Arg Leu Glu Ile Pro Ala Ile
Glu Leu Pro Ser Glu Asn Glu Arg Gly Tyr Tyr Ile Pro His Gln Ser
                              40
         35
 Ser Leu Pro Gln Asp Asn Arg Gly Asn Ser Arg Asp Ser Lys Glu Ile
 Ser Ile Ile Glu Lys Thr Asn Arg Glu Ser Ile Thr Thr Asn Val Glu
                                          75
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Gly Arg Arg Asp Ile His Lys Gly His Leu Glu Glu Lys Lys Asp Gly 85 90 95

Ser Ile Lys Pro Glu Gln Lys Glu Asp Lys Ser 100 105

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<212> PRT

<213> Plasmodium falciparum

<400> 20

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1 5 10 15

Lys Asn Leu Glu Arg Lys Lys Glu His Gly Asp Ile Leu Ala Glu Asp 20 25 30

Leu Tyr Gly Arg Leu Glu Ile Pro Ala Ile Glu Leu Pro Ser Glu Asn 35 40 45

Glu Arg Gly Tyr Tyr Ile Pro His Gln Ser Ser Leu Pro Gln Asp Asn 50 60

Arg Gly Asn Ser Arg Asp Ser Lys Glu Ile Ser Ile Ile Glu Lys Thr 65 70 75 80

Asn Arg Glu Ser Ile Thr Thr Asn Val Glu Gly Arg Arg Asp Ile His 85 90 95

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Lys Glu Asp Lys Ser 115

<210> 21

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<212> PRT

<213> Plasmodium falciparum

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Asp Thr Lys Lys Asn Leu Glu Arg Lys Lys Glu His Gly Asp Ile Leu 1 5 10 15

Ala Glu Asp Leu Tyr Gly Arg Leu Glu Ile Pro 20 25

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<212> PRT

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Gln Arg Lys Ala Asp Thr Lys Lys

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<212> PRT

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Glu Ser Ile Thr Thr Asn Val Glu Gly Arg Arg Asp Ile His Lys 20 25 30

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<213> Plasmodium falciparum

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Arg Asp Glu Leu Phe Asn Glu Leu Leu Asn Ser Val Asp Val Asn Gly
1 5 10 15

Glu Val Lys Glu Asn Ile Leu Glu Glu Ser Gln Val Asn Glu Asp Ile 20 25 30

Phe Asn Ser Leu Val Lys Ser Val Gln Gln Gln Gln His Asn Val
35 40 45

Glu Glu Lys Val Glu Glu Ser Val Glu Glu Asn Asp Glu Glu Ser Val 50 55 60

Glu Glu Asn Val Glu Glu Asn Val Glu Glu Asn Asp Asp Gly Ser Val
65 70 75 80

Ala Ser Ser Val Glu Glu Ser Ile Ala Ser Ser Val Asp Glu Ser Ile 85 90 95

Asp Ser Ser Ile Glu Glu Asn Val Ala Pro Thr Val Glu Glu Ile Val

Ala Pro Thr Val Glu Glu Ile Val Ala Pro Ser Val Val Glu Lys Cys 115 120 125

Ala Pro Ser Val Glu Glu Ser Val Ala Pro Ser Val Glu Glu Ser Val 130 135 140

Ala Glu Met Leu Lys Glu Arg 145 150

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                5
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Glu Val Lys Glu Asn Ile Leu Glu Glu Ser Gln Val Asn Asp Asp Ile
                                 25
Phe Asn Ser Leu Val Lys Ser Val Gln Gln Gln Gln His Asn
<210> 26
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Asp Glu Leu Phe Asn Glu Leu Leu Asn Ser Val Asp Val Asn Gly Glu
Val Lys Glu Asn Ile Leu Glu Glu Ser Gln
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Leu Glu Glu Ser Gln Val Asn Asp Asp Ile Phe Ser Asn Ser Leu Val
                                     10
Lys Ser Val Gln Gln Gln Gln His Asn Val
            20
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Glu Glu Ser Val Ala Glu Met Leu Lys Glu Arg

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Gln Gln Ser Asp Leu Glu Gln Glu Arg Leu Ala Lys Glu Lys Leu Gln
Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Arg Ala Lys Glu Lys Leu
Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Arg Ala Lys Glu Lys
Leu Gln Glu Gln Ser Asp Leu Glu Gln Asp Arg Leu Ala Lys Glu
Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Arg Ala Lys
                                                     110
                                 105
 Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Arg Ala
                             120
 Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Leu
 Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg
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                     150
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Arg Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu
                                    170
Arg Arg Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln
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Glu Arg Arg Ala Lys Glu Lys Leu Gln Glu Gln Arg Asp Leu Glu
        195
Gln Arg Lys Ala Asp Thr Lys Lys Asn Leu Glu Arg Lys Lys Glu His
                        215
Gly Asp Ile Leu Ala Glu Asp Leu Tyr Gly Arg Leu Glu Ile Pro Ala
Ile Glu Leu Pro Ser Glu Asn Glu Arg Gly Tyr Tyr Ile Pro His Gln
                                    250
                245
Ser Ser Leu Pro Gln Asp Asn Arg Gly Asn Ser Arg Asp Ser Lys Glu
                                265
Ile Ser Ile Ile Glu Lys Thr Asn Arg Glu Ser Ile Thr Thr Asn Val
                            280
Glu Gly Arg Arg Asp Ile His Lys Gly His Leu Glu Glu Lys Lys Asp
                        295
Gly Ser Ile Lys Pro Glu Gln Lys Glu Asp Lys Ser
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tagaacaaga tagacttgct aaagaaaagt tacaagagca gcaaagcgat ttagaacaag 120
agagacttgc taaagaaaag ttgcaagaac aacaaagcga tctagaacaa gagagacgtg 180
ctaaagaaaa gttgcaagaa caacaaagcg atttagaaca agagagacgt gctaaagaaa 240
agttgcaaga acaacaaagc gatttagaac aagatagact tgctaaagaa aagttacaag 300
agcagcaaag cgatttagaa caagagagac gtgctaaaga aaagttgcaa gaacaacaaa 360
gcgatttaga acaagagaga cgtgctaaag aaaagttgca agaacaacaa agcgatttag 420
aacaagagag acttgctaaa gaaaagttgc aagaacaaca aagcgattta gaacaagaga 480
gacgtgctaa agaaaagttg caagaacaac aaagcgattt agaacaagag agacgtgcta 540
aagaaaagtt gcaagaacaa caaagcgatt tagaacaaga gagacgtgct aaagaaaagt 600
tgcaagagca gcaaagagat ttagaacaaa ggaaggctga tacgaaaaaa aatttagaaa 660
gaaaaaagga acatggagat atattagcag aggatttata tggtcgttta gaaataccag 720
ctatagaact tccatcagaa aatgaacgtg gatattatat accacatcaa tcttctttac 780
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ctcaggacaa cagagggaat agtagagatt ccaaggaaat atctataata gaaaaaacaa 840 atagagaatc tattacaaca aatgttgaag gacgaaggga tatacataaa ggacatcttg 900

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agtgttcaac aagaacaaca acacaatgtt gaagaaaaag ttgaagaaag tgtagaagaa 180
aatqacqaaq aaagtgtaga agaaaatgta gaagaaaatg tagaagaaaa tgacgacgga 240
agtgtagcct caagtgttga agaaagtata gcttcaagtg ttgatgaaag tatagattca 300
agtattgaag aaaatgtagc tccaactgtt gaagaaatcg tagctccaac tgttgaagaa 360
attgtagctc caagtgttgt agaaaagtgt gctccaagtg ttgaagaaag tgtagctcca 420
agtqttqaag aaagtgtagc tgaaatgttg aaggaaagga attc
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aaaaagatga aatcataaaa tctaacttga gaagtggttc ttcaaattct aggaatcgaa 180
taaatgagga aaatcacgag aagaaacacg ttttatctca taattcatat gagaaaacta 240
aaaataatga aaataataaa tttttcgata aggataaaga gttaacgatg tctaatgtaa 300
aaaatgtgtc acaaacaaat ttcaaaagtc ttttaagaaa tcttggtgtt tcagagaata 360
tattccttaa agaaaataaa ttaaataagg aagggaaatt aattgaacac ataataaatg 420
atgatgacga taaaaaaaaa tatattaaag ggcaagacga aaacagacaa gaagatcttg 480
aagaaaaagc agctaaagaa aagttacagg ggcaacaaag cgattcagaa caagagagac 540
gtgctaaaga aaagttgcaa gaacaacaaa gcgatttaga acaagagaga cttgctaaag 600
aaaagttgca agaacaacaa agcgatttag aacaagagag acgtgctaaa gaaaagttgc 660
aagaacaaca aagcgattta gaacaagaga gacttgctaa agaaaagttg caagaacaac 720
aaagcgattt agaacaagag agacgtgcta aagaaaagtt gcaagaacaa caaagcgatt 780
tagaacaaga gagacgtgct aaagaaaagt tgcaagaaca acaaagcgat ttagaacaag 840
agagacttgc taaagaaaag ttacaagagc agcaaagcga tttagaacaa gatagacttg 900
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														gct Ala		720
gaa Glu	aag Lys	ttg Leu	caa Gln	gaa Glu 245	caa Gln	caa Gln	agc Ser	gat Asp	tta Leu 250	gaa Glu	caa Gln	gag Glu	aga Arg	cgt Arg 255	gct Ala	768
														aga Arg		816
gct Ala	aaa Lys	gaa Glu 275	aag Lys	tta Leu	caa Gln	gag Glu	cag Gln 280	caa Gln	agc Ser	gat Asp	tta Leu	gaa Glu 285	caa Gln	gat Asp	aga Arg	864
ctt Leu	gct Ala 290	aaa Lys	gaa Glu	aag Lys	ttg Leu	caa Gln 295	gaa Glu	caa Gln	caa Gln	agc Ser	gat Asp 300	tta Leu	gaa Glu	caa Gln	gag Glu	912
aga Arg 305	cgt Arg	gct Ala	aaa Lys	gaa Glu	agg Arg 310	ttg Leu	caa Gln	gaa Glu	caa Gln	caa Gln 315	agc Ser	gat Asp	tta Leu			954

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<212> PRT

<213> Plasmodium falciparum

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Glu Ile Ile Lys Ser Asn Leu Arg Ser Gly Ser Ser Asn Ser Arg Asn 40 45

Arg Ile Asn Glu Glu Asn His Glu Lys Lys His Val Leu Ser His Asn 50 55 60

Ser Tyr Glu Lys Thr Lys Asn Asn Glu Asn Asn Lys Phe Phe Asp Lys 65 70 75 80

Asp Lys Glu Leu Thr Met Ser Asn Val Lys Asn Val Ser Gln Thr Asn 85 90 95

Phe Lys Ser Leu Leu Arg Asn Leu Gly Val Ser Glu Asn Ile Phe Leu 100 105 110

Lys Glu Asn Lys Leu Asn Lys Glu Gly Lys Leu Ile Glu His Ile Ile 120 Asn Asp Asp Asp Lys Lys Lys Tyr Ile Lys Gly Gln Asp Glu Asn Arg Gln Glu Asp Leu Glu Glu Lys Ala Ala Lys Glu Lys Leu Gln Gly 150 145 Gln Gln Ser Asp Ser Glu Gln Glu Arg Arg Ala Lys Glu Lys Leu Gln 170 Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Leu Ala Lys Glu Lys Leu 185 Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Arg Ala Lys Glu Lys 200 Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Leu Ala Lys Glu 215 Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Arg Ala Lys 235 230 Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Arg Ala 250 Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Leu 265 260 Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Asp Arg 280 Leu Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu 295 Arg Arg Ala Lys Glu Arg Leu Gln Glu Gln Gln Ser Asp Leu 315 310 <210> 39 <211> 1493 <212> DNA <213> Plasmodium falciparum <400> 39 caagaacaac aaagcgatct agaacaagag agacgtgcta aagaaaagtt gcaagaacaa 60 caaagcgatt tagaacaaga tagacttgct aaagaaaagt tacaagagca gcaaagcgat 120 ttagaacaag agagacttgc taagaaaagt tgcaagaaca acaaagcgat ctagaacaag 180 agagacgtgc taaagaaaag ttgcaagaac aacaaagcga tttagaacaa gagagacgtg 240 ctaaagaaaa gttgcaagaa caacaaagcg atttagaaca agatagactt gctaaagaaa 300 agttacaaga gcagcaaagc gatttagaac aagagagacg tgctaaagaa aagttgcaag 360 aacaacaaag cgatttagaa caagagagac gtgctaagaa aagttgcaag aacaacaaag 420

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catcttgaag aaaagaaaga tggttcaata aaaccagaac aaaaagaaga taaatctgct 960
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Leu Gln Glu Gln Ser Asp Leu Glu Gln Asp Arg Leu Ala Lys Glu
              20
aag tta caa gag cag caa agc gat tta gaa caa gag aga ctt gct aaa
                                                                   144
Lys Leu Gln Gln Gln Ser Asp Leu Glu Gln Glu Arg Leu Ala Lys
          35
 gaa aag ttg caa gaa caa caa agc gat cta gaa caa gag aga cgt gct
                                                                   192
 Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Arg Ala
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gct Ala	aaa Lys	gaa Glu	aag Lys	ttg Leu 85	Gln	gaa Glu	caa Gln	caa Gln	agc Ser 90	Asp	tta Leu	gaa Glu	caa Gln	gat Asp 95	Arg	288
											gat Asp					336
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gag Glu	aga Arg 130	cgt Arg	gct Ala	aaa Lys	gaa Glu	aag Lys 135	ttg Leu	caa Gln	gaa Glu	caa Gln	caa Gln 140	agc Ser	gat Asp	tta Leu	gaa Glu	432
caa Gln 145	gag Glu	aga Arg	ctt Leu	gct Ala	aaa Lys 150	gaa Glu	aag Lys	ttg Leu	caa Gln	gaa Glu 155	caa Gln	caa Gln	agc Ser	gat Asp	tta Leu 160	480
gaa Glu	caa Gln	gag Glu	aga Arg	cgt Arg 165	gct Ala	aaa Lys	gaa Glu	aag Lys	ttg Leu 170	caa Gln	gaa Glu	caa Gln	caa Gln	agc Ser 175	gat Asp	528
tta Leu	gaa Glu	caa Gln	gag Glu 180	aga Arg	cgt Arg	gct Ala	aaa Lys	gaa Glu 185	aag Lys	ttg Leu	caa Gln	gaa Glu	caa Gln 190	caa Gln	agc Ser	576
gat Asp	tta Leu	gaa Glu 195	caa Gln	gag Glu	aga Arg	cgt Arg	gct Ala 200	aaa Lys	gaa Glu	aag Lys	ttg Leu	caa Gln 205	gag Glu	cag Gln	caa Gln	624
aga Arg	gat Asp 210	Leu	gaa Glu	caa Gln	agg Arg	aag Lys 215	gct Ala	gat Asp	acg Thr	aaa Lys	aaa Lys 220	aat Asn	tta Leu	gaa Glu	aga Arg	672
aaa Lys 225	Lys	gaa Glu	cat His	gga Gly	gat Asp 230	ata Ile	tta Leu	gca Ala	gag Glu	gat Asp 235	tta Leu	tat Tyr	ggt Gly	cgt Arg	tta Leu 240	720
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ata Ile	cca Pro	cat His	caa Gln 260	Ser	tct Ser	tta Leu	cct Pro	cag Gln 265	Asp	aac Asn	aga Arg	gly	aat Asn 270	Ser	aga Arg	816
gat Asp	tcc Ser	aag Lys 275	Glu	ata Ile	tct Ser	ata Ile	ata :Ile :280	Glu	aaa Lys	aca Thr	aat Asn	aga Arg 285	Glu	tct Ser	att Ile	864

														ctt Leu		912
														aaa Lys		960
														gat Asp 335		1008
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														aac Asn		1152
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gat Asp	gat Asp	tta Leu	gat Asp	gaa Glu 405	gga Gly	ata Ile	gaa Glu	aaa Lys	tca Ser 410	tca Ser	gaa Glu	gaa Glu	tta Leu	tct Ser 415	gaa Glu	1248
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gag Glu	tta Leu	tct Ser	gaa Glu	gat Asp 485	Ile	act Thr	aaa Lys	tat Tyr	ttt Phe 490	Met	aaa Lys	cta Leu	taa	aag	gtt	1488
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- Lys Leu Gl
n Glu Gl
n Gl
n Ser Asp Leu Glu Glu Glu Arg Leu Ala Lys $35 \hspace{1cm} 40 \hspace{1cm} 45$
- Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Arg Ala 50 55 60
- Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu Arg Arg
 65 70 75 80
- Ala Lys Glu Lys Leu Gln Gln Gln Ser Asp Leu Glu Gln Asp Arg 85 90 95
- Leu Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln Glu 100 105 110
- Arg Arg Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu Gln 115 120 125
- Glu Arg Arg Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu Glu 130 135 140
- Gln Glu Arg Leu Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp Leu 145 150 155 160
- Glu Gln Glu Arg Arg Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser Asp 165 170 175
- Leu Glu Glu Arg Arg Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser 180 185 190
- Asp Leu Glu Gln Glu Arg Arg Ala Lys Glu Lys Leu Gln Glu Gln Gln 195 200 205
- Arg Asp Leu Glu Gln Arg Lys Ala Asp Thr Lys Lys Asn Leu Glu Arg 210 215 220
- Lys Lys Glu His Gly Asp Ile Leu Ala Glu Asp Leu Tyr Gly Arg Leu 225 230 235 240
- Glu Ile Pro Ala Ile Glu Leu Pro Ser Glu Asn Glu Arg Gly Tyr Tyr 245 250 255
- Ile Pro His Gln Ser Ser Leu Pro Gln Asp Asn Arg Gly Asn Ser Arg 260 265 270

Asp	Ser	Lys 275	Glu	Ile	Ser	Ile	Ile 280	Glu	Lys	Thr	Asn	Arg 285	Glu	Ser	Ile	
Thr	Thr 290	Asn	Val	Glu	Gly	Arg 295	Arg	Asp	Ile	His	Lys 300	Gly	His	Leu	Glu	
Glu 305	Lys	Lys	Asp	Gly	Ser 310	Ile	Lys	Pro	Glu	Gln 315	Lys	Glu	Asp	Lys	Ser 320	
Ala	Asp	Ile	Gln	Asn 325	His	Thr	Leu	Glu	Thr 330	Val	Asn	Ile	Ser	Asp 335	Val	
Asn	Asp	Phe	Gln 340	Ile	Ser	Lys	Tyr	Glu 345	Asp	Glu	Ile	Ser	Ala 350	Glu	Tyr	
Asp	Asp	Ser 355	Leu	Ile	Asp	Glu	Glu 360	Glu	Asp	Asp	Glu	Asp 365	Leu	Asp	Glu	
Phe	Lys 370	Pro	Ile	Val	Gln	Tyr 375	Asp	Asn	Phe	Gln	Asp 380	Glu	Glu	Asn	Ile	
Gly 385	Ile	Tyr	Lys	Glu	Leu 390	Glu	Asp	Leu	Ile	Glu 395		Aśn	Glu	Asn	Leu 400	
Asp	Asp	Leu	Asp	Glu 405	Gly	Ile	Glu	Lys	Ser 410	Ser	Glu	Glu	Leu	Ser 415	Glu	
Glu	Lys	Ile	Lys 420	Lys	Gly	Lys	Lys	Tyr 425	Glu	Lys	Thr	Lys	Asp 430	Asn	Asn	
Phe	Lys	Pro 435		Asp	Lys	Ser	Leu 440		Asp	Glu	His	Ile 445	Lys	Lys	Tyr	
Lys	Asn 450		Lys	Gln	Val	Asn 455		Glu	Lys	Glu	Lys 460		Ile	Lys	Ser	
Leu 465		His	Ile	Phe	Asp 470		Asp	Asn	Glu	11e 475		Gln	Ile	Val	Asp 480	
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aag tta caa Lys Leu Gln 35	gag cag caa Glu Gln Gln	agc gat t Ser Asp I 40	tta gaa (Leu Glu (caa gag aga Gln Glu Arg 45	ctt gct Leu Ala	aaa 144 Lys
gaa aag ttg Glu Lys Leu 50	caa gaa caa Gln Glu Gln	caa agc g Gln Ser 2 55	gat cta (Asp Leu (gaa caa gag Glu Gln Glu 60	aga cgt Arg Arg	gct 192 Ala
aaa gaa aag Lys Glu Lys 65	ttg caa gaa Leu Gln Glu 70	Gln Gln	agc gat Ser Asp	tta gaa caa Leu Glu Gln 75	gag aga Glu Arg	cgt 240 Arg 80
gct aaa gaa Ala Lys Glu	aag ttg caa Lys Leu Glr 85	gaa caa Glu Gln	caa agc Gln Ser 90	gat tta gaa Asp Leu Glu	caa gat Gln Asp 95	aga 288 Arg
ctt gct aaa Leu Ala Lys	gaa aag tta Glu Lys Leu 100	Gln Glu	cag caa Gln Gln 105	agc gat tta Ser Asp Leu	gaa caa Glu Gln 110	gag 336 Glu
aga cgt gct Arg Arg Ala 115	aaa gaa aag Lys Glu Lys	g ttg caa s Leu Gln 120	gaa caa Glu Gln	caa agc gat Gln Ser Asp 125	tta gaa Leu Glu	caa 384 Gln
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caa gag aga Gln Glu Arg 145	ctt gct aaa Leu Ala Lya 15	s Glu Lys	ttg caa Leu Gln	gaa caa caa Glu Gln Gln 155	agc gat Ser Asp	tta 480 Leu 160
gaa caa gag Glu Gln Glu	aga cgt gc Arg Arg Al	aaa gaa a Lys Glu	aag ttg Lys Leu 170	caa gaa caa Gln Glu Gln	caa agc Gln Ser 175	gat 528 Asp
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		gaa Glu 195														624
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aaa Lys 225	aag Lys	gaa Glu	cat His	gga Gly	gat Asp 230	ata Ile	tta Leu	gca Ala	gag Glu	gat Asp 235	tta Leu	tat Tyr	ggt Gly	cgt Arg	tta Leu 240	720
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		cat His														816
gat Asp	tcc Ser	aag Lys 275	gaa Glu	ata Ile	tct Ser	ata Ile	ata Ile 280	gaa Glu	aaa Lys	aca Thr	aat Asn	aga Arg 285	gaa Glu	tct Ser	att Ile	864
aca Thr	aca Thr 290	aat Asn	gtt Val	gaa Glu	gga Gly	cga Arg 295	agg Arg	gat Asp	ata Ile	cat His	aaa Lys 300	gga Gly	cat His	ctt Leu	gaa Glu	912
gaa Glu 305	aag Lys	aaa Lys	gat Asp	ggt Gly	tca Ser 310	ata Ile	aaa Lys	cca Pro	gaa Glu	caa Gln 315	aaa Lys	gaa Glu	gat Asp	aaa Lys	ser 320	960
gct Ala	gac Asp	ata Ile	caa Gln	aat Asn 325	cat His	aca Thr	tta Leu	gag Glu	aca Thr 330	gta Val	aat Asn	att Ile	tct Ser	gat Asp 335	gtt Val	1008
aat Asn	gat Asp	ttt Phe	caa Gln 340	ata Ile	agt Ser	aag Lys	tat Tyr	gag Glu 345	gat Asp	gaa Glu	ata Ile	agt Ser	gct Ala 350	gaa Glu	tat Tyr	1056
Asp	Asp	Ser 355	Leu	Ile	Asp	Glu	Glu 360	Glu	Asp	Asp	Glu	365	Leu	Asp	gaa Glu	1104
Phe	Lys 370	Pro	Ile	Val	Gln	Tyr 375	Asp	Asn	Phe	Gln	Asp 380	Glu	Glu	Asn	ata Ile	1152
Gly 385	Ile	Tyr	Lys	Glu	Leu 390	. Glu	Asp	Leu	Ile	Glu 395	Lys	Asn	Glu	. Asn	tta Leu 400	1200
gat Asp	gat Asp	tta Leu	gat Asp	gaa Glu 405	Gly	ata Ile	gaa Glu	aaa Lys	tca Ser 410	Ser	gaa Glu	gaa Glu	tta Leu	tct Ser 415	gaa Glu	1248

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gaa aaa ata Glu Lys Ile									1296
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aaa aat gat Lys Asn Asp 450									1392
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ata tat									1494
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Lys Leu Gln 35		Gln Ser	Asp Let	ı Glu Glı	n Glu Arc 45		Ala	Lys	
Glu Lys Leu 50	Gln Glu	Gln Gln 55		Leu Gl	a Gln Glu 60	Arg	Arg	Ala	
Lys Glu Lys 65	Leu Gln	Glu Gln 70	Gln Se	Asp Let		ı Glu	Arg	Arg 80	
Ala Lys Glu	Lys Leu 85	Gln Glu	Gln Glı	n Ser Asj 90	p Leu Glı	ı Gln	Asp 95	Arg	
Leu Ala Lys	Glu Lys 100	Leu Gln	Glu Gli 10!	_	r Asp Leu	Glu 110	Gln	Glu	
Arg Arg Ala 115		Lys Leu	Gln Gli 120	ı Gln Gl:	n Ser Asp 125		Glu	Gln	
Glu Arg Arg 130	Ala Lys			n Glu Gl	n Gln Sei 140	Asp	Leu	Glu	
		135	1		140				

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- Leu Glu Glu Arg Arg Ala Lys Glu Lys Leu Gln Glu Gln Gln Ser 180 185 190
- Asp Leu Glu Gln Glu Arg Arg Ala Lys Glu Lys Leu Gln Glu Gln Gln 195 200 205
- Arg Asp Leu Glu Gln Arg Lys Ala Asp Thr Lys Lys Asn Leu Glu Arg 210 215 220
- Lys Lys Glu His Gly Asp Ile Leu Ala Glu Asp Leu Tyr Gly Arg Leu 225 230 235 240
- Glu Ile Pro Ala Ile Glu Leu Pro Ser Glu Asn Glu Arg Gly Tyr Tyr 245 250 255
- Ile Pro His Gln Ser Ser Leu Pro Gln Asp Asn Arg Gly Asn Ser Arg 260 265 270
- Asp Ser Lys Glu Ile Ser Ile Ile Glu Lys Thr Asn Arg Glu Ser Ile 275 280 285
- Thr Thr Asn Val Glu Gly Arg Arg Asp Ile His Lys Gly His Leu Glu 290 295 300
- Glu Lys Lys Asp Gly Ser Ile Lys Pro Glu Gln Lys Glu Asp Lys Ser 305 310 315 320
- Ala Asp Ile Gln Asn His Thr Leu Glu Thr Val Asn Ile Ser Asp Val 325 330 335
- Asn Asp Phe Gln Ile Ser Lys Tyr Glu Asp Glu Ile Ser Ala Glu Tyr 340 345 350
- Asp Asp Ser Leu Ile Asp Glu Glu Glu Asp Asp Glu Asp Leu Asp Glu 355
- Phe Lys Pro Ile Val Gln Tyr Asp Asn Phe Gln Asp Glu Glu Asn Ile 370 375 380
- Gly Ile Tyr Lys Glu Leu Glu Asp Leu Ile Glu Lys Asn Glu Asn Leu 385 390 395 400
- Asp Asp Leu Asp Glu Gly Ile Glu Lys Ser Ser Glu Glu Leu Ser Glu 405 410 415
- Glu Lys Ile Lys Lys Gly Lys Lys Tyr Glu Lys Thr Lys Asp Asn Asn 420 425 430
- Phe Lys Pro Asn Asp Lys Ser Leu Tyr Asp Glu His Ile Lys Lys Tyr 435 440 445
- Lys Asn Asp Lys Gln Val Asn Lys Glu Lys Glu Lys Phe Ile Lys Ser 450 460

Leu Phe His Ile Phe Asp Gly Asp Asn Glu Ile Leu Gln Ile Val Asp 465 470 470 480

Glu Leu Ser Glu Asp Ile Thr Lys Tyr Phe Met Lys Leu \$485\$